

DREDGED

MATERIALS

MANAGEMENT

TEAM

Christine Todd Whitman
Governor, State of New Jersey

Steven J. Corodemus, Chairman
Assemblyman, District 11
*Chairman, NJ General Assembly Environment,
Science and Technology Committee*

James E. Benton, Executive Director
NJ Petroleum Council

Lillian Borrone, Director, Port Department
Port Authority of NY & NJ

James A. Capo, President
NY Shipping Association, Inc.

Albert Cernadas, Exec. Vice-President
Intl. Longshoremen's Association

Mauro Checchio
Chairman, The Union County Alliance

Angela Cristini, Ph.D.
Ramapo College of NJ

Sally Dudley, Executive Director
Association of NJ Environmental Commissions

Joseph M. Kyrillos, Jr.
Senator, District 13

Frank M. McDonough, Esq.
Director, Maritime Resources

M. Brian Maher, President
Maher Terminals, Inc.

Lewis J. Nagy, Assistant Commissioner
NJ Dept. of Environmental Protection

Edward T. O'Connor, Jr.
Senator, District 31

Dennis J. Suszkowski, Ph.D.
*Hudson River Foundation for Science &
Environmental Research, Inc.*

James T. B. Tripp, Esq.
Environmental Defense Fund, Inc.

Robert K. Tucker, Ph.D.
Ecopolicy Center, Rutgers University

Cynthia A. Zipf, Executive Director
Clean Ocean Action

401 East State Street, PO Box 402, Trenton, NJ 08625-0402

(609)292-2885

GOVERNOR WHITMAN'S
DREDGED MATERIALS
MANAGEMENT TEAM

RECOMMENDATIONS
ON THE

Interim Report of the

USACE
DREDGED MATERIALS
MANAGEMENT PLAN

JANUARY, 1998

GOVERNOR WHITMAN'S
DREDGED MATERIALS MANAGEMENT TEAM

REVIEW OF THE USACE
DREDGED MATERIALS MANAGEMENT PLAN

I. INTRODUCTION

The Dredged Materials Management Team (DMMT or the Team) was created in June, 1994 as a task force established by Governor Christine Todd Whitman to identify short-term solutions for the non-ocean disposal of contaminated dredged material from the Port of New York and New Jersey. Assemblyman Steven J. Corodemus (Legislative District 11 and Chairman of the NJ General Assembly Environment, Science & Technology Committee) was appointed Chairman of this Task Force. Members include: representatives of the scientific, environmental, labor, port, and business communities.

The Dredged Materials Management Team issued a final report in February 1996, entitled, Dredging: What is the Best Approach for New Jersey?, and several recommendations in that report have been implemented. These include:

- a. creation of a subaqueous confined disposal facility (pit) in Newark Bay,
- b. creation of upland containment at OENJ, in Elizabeth, NJ,
- c. establishment of innovative short-term strategies at Bayway Refinery,
- d. expediting and streamlining of permitting procedures , and
- e. appointment of a Director of Maritime Resources (Frank M. McDonough) to oversee dredging operations throughout the state.

The Team continued to meet regularly since that time to oversee implementation of its recommendations and to pursue longer-term management strategies for contaminated dredged materials.

During April, 1997, Governor Whitman issued a directive to the Dredged Materials Management Team to review the U.S. Army Corps of Engineer's (USACE) Dredged Materials Management Plan (DMMP) for the Port of New York and New Jersey (Interim Report, September, 1996) and make recommendations to her within a six-month time period. The Governor also adopted a general policy that precludes siting of dredged materials disposal facilities near "homes, schools and places of worship" in New Jersey. She further announced her opposition to the siting of a nearshore containment island for dredged materials in Zone 1, located off Keansburg, New Jersey due to habitat and water quality issues.

This report concludes the work of the DMMT to date and includes the Team's consensus recommendations regarding the Interim Report of the DMMP. However, it should be noted that the states of New York and New Jersey have completed a Joint Dredging Plan for the Port of New York and New Jersey. This plan is being cooperatively implemented by both states, their respective environmental and economic development agencies, and the Port Authority of New York and New Jersey.

II. SUMMARY OF THE DMMP

The stated mission of the USACE DMMP for the Port of New York and New Jersey is to bring together a unified plan, regionally supported, to meet the dredged material management needs of the Harbor/Estuary in environmentally useful and economic ways. The goal is to facilitate dredging activities

in the Port in an environmentally sound manner. In order for the Port of NY/NJ to remain competitive, dredging to a depth of 50 feet may be necessary in the near future to accommodate deeper draft vessels and to ensure that the Port will remain as the premier East Coast cargo port into the 21st century.

In reviewing the plan, the DMMT considered recent developments at the federal level with respect to dredged materials disposal. On August 28, 1997, the U.S. Environmental Protection Agency (EPA) promulgated a final rule that de-designated the New York Bight Dredged Material Disposal Site (also known as the Mud Dump Site) and simultaneously designated the Historic Areas Remediation Site (HARS). The HARS will be remediated with uncontaminated dredged materials (i.e. dredged materials that meet current Category I standards and will not cause significant undesirable effects including through bioaccumulation). This HARS material will cap contaminated sediments that are already at the site due to previous disposal activities. To date, clean red clay material from the Newark Bay CDF and clean sand for capping have been placed as part of the HARS program.

At the regularly scheduled June 1997 DMMT meeting, the USACE made an initial presentation regarding the DMMP to Team members. Major disposal and management alternatives considered in the Interim Report of the DMMP include ocean disposal, containment islands, containment areas, subaqueous pits, upland disposal, habitat creation/restoration, decontamination technologies, sediment reduction, ocean disposal with geobags, and pit disposal with geobags. The attached table (A) lists these management alternatives provided to the Team for review prior to the date of this report.

At a subsequent meeting in August, 1997, the USACE indicated that several disposal sites and disposal alternatives had been eliminated or modified from consideration by the federal government after initial public comments. The sites that were excluded or modified at that time included:

Excluded options:

- OD-1: Disposal at the Mud Dump Site
- OD-2: Ocean Disposal at the Mud Dump Site with capping
- CI-1a: Containment Island in Zone 1, NJ Sheet Pile Cofferdam without pit
- CI-1b: Containment Island in Zone 1, NJ Sheet Pile Cofferdam with pit
- CI-1c: Containment Island in Zone 1, NJ Stone/Armor Embankment with pit
- UD-1: Upland Disposal at Site 159, Bergen County (Leonia)
- UD-2: Upland Disposal at Site 161, Bergen County (Moonachie)
- UD-4: Upland Disposal at Site 184, Middlesex County
- UD-8: Upland Disposal at Site 214, Monmouth County (Shrewsbury)

Modified options:

- CI-2a: Containment Island in Zone 2, NY/NJ Sheet Pile Cofferdam without pit
- CI-2b: Containment Island in Zone 2, NY/NJ Sheet Pile Cofferdam with pit
- CI-2c: Containment Island in Zone 2, NY/NJ Stone/Armor Embankment with pit
- CI-3a: Containment Island in Zone 3, US Sheet Pile Cofferdam without pit
- CI-3b: Containment Island in Zone 3, US Concrete Caisson Embankment
- SP-1: New Subaqueous pit Zone 1, NJ Lower Bay
- SP-2: New Subaqueous pit in Zone 1, NY/NJ Lower Bay
- UD-5: Upland Disposal at Site 187, Middlesex County (Raritan Arsenal)
- UD-6: Upland Disposal at Site 190, Middlesex County (Edgeboro Landfill)
- UD-7: Upland Disposal at Site 193, Monmouth County (Belford)

The DMMT concurred with the USACE to exclude these options for contaminated sediment management. It is important to note that the USACE Interim Report is a "working document" and continues to be revised as sediment management alternatives are studied. During the course of the Team's review, management alternatives were added, deleted, renumbered, or revised. Several drafts of

alternatives are included as Tables A, B, C, and D at the end of this report. The USACE recently released a Progress Report regarding the DMMP on January 7, 1998. A final DMMP is scheduled to be completed in the Fall, 1998. Therefore, the Team considered the original management options as well as some options identified in "draft alternatives lists."

For the purposes of this review, the DMMT also disregarded sites that were located in upland areas and waterways solely in New York:

- CA-1: New Containment Area in Atlantic Basin, NY
- SP-3: New Subaqueous Pit at Bowery Bay, NY
- SP-4: New Subaqueous Pit at Bay Ridge Flats, NY
- SP-8: Existing Large East Bank Subaqueous Pit, NY
- SP-9: Existing Small East Bank Subaqueous Pit, NY
- SP-10: Existing West Bank Subaqueous Pit, NY
- SP-11: Existing CAC Subaqueous Pit, NY
- UD-9: Upland Disposal at Site 235, Richmond County, NY
- UD-10: Upland Disposal at Cold Spring Quarry, NY
- UD-11: Upland Disposal at Cedar Cliff Quarry, NY
- UD-12: Upland Disposal at Clinton Point Quarry, NY
- UD-13: Upland Disposal at Brigham Brickyard Quarry, NY
- UD-14: Upland Disposal at Cementon Quarry, NY
- UD-15: Upland Disposal at Ravens Quarry, NY
- SR-1: Sediment Reduction at Port Chester, NY
- SR-2: Sediment Reduction at Flushing Bay, NY
- SR-6: Sediment Reduction at Bay Ridge/Red Hook Channels, NY

Management alternatives located in NY waters will be discussed by members of the NY/NJ Joint Dredging Plan team. The NY/NJ Joint Dredging Plan for the Port of New York and New Jersey was developed by the two states to accomplish two major objectives vital to the maintenance of regional navigational assets. These objectives are:

- 1) to promote greater certainty and predictability in dredging project review process, and dredged material management; and
- 2) to facilitate effective long-term environmentally sound management strategies for addressing dredging and disposal needs for the region.

III. SUMMARY OF PROPOSALS AND RECOMMENDATIONS

The following chart summarizes management options included in the DMMP Interim Report with Team recommendations; it also includes recommendations for management options that have been suggested by the USACE in the *progress report* (attached) for the USACE DMMP Alternatives Summary. A more detailed discussion of *certain* DMMP alternatives follows the chart.

The DMMT used the following criteria to screen options proposed in the DMMP:

- Environmental concerns,
- Human health risks,
- Cost,
- Feasibility,
- Agency approval, and
- Local government support.

DMMP MANAGEMENT ALTERNATIVES

<i>ID #</i>	<i>Management Alternative</i>	<i>Location</i>	<i>Status</i>	<i>Team Response</i>
OCEAN ALTERNATIVES:				
OD-1	Ocean Disposal at the Mud Dump site	US	Site closed to contaminated sediment disposal	_____
OD-2	Ocean Disposal at the Mud Dump site with capping	US	Site closed to contaminated sediment disposal	_____
OD-3/OR-1	Ocean Remediation at Historic Area Remediation Site	US (HARS)	Remediation underway	Support continued HARS remediation
CONTAINMENT ISLAND ALTERNATIVES:				
CI-1a	Containment Island in Zone 1, NJ Sheet Pile Cofferdam without pit	NJ waters (off Keansburg)	Not under consideration by DMMT due to Governor Whitman's directive and removal by USACE from consideration.	_____
CI-1b	Containment Island in Zone 1, NJ Sheet pile Cofferdam with pit	(same as above)	(same as above)	_____
CI-1c	Containment Island in Zone 1, NJ Stone/Armor Embankment with pit	(same as above)	(same as above)	_____
CI-2a	Containment Island in Zone 2, Sheet Pile Cofferdam without pit	NY/NJ	Zone 2 is modified (see below)	_____
CI-2b	Containment Island in Zone 2, NY/NJ Sheet Pile Cofferdam with pit	NY/NJ	Zone 2 is modified (see below)	_____
CI-2c	Containment Island in Zone 2, NY/NJ Stone/Armor Embankment with pit	NY/NJ	Zone 2 is modified (see below)	_____
CI-3a	Containment Island in Zone 3, US, Sheet Pile Cofferdam without pit	US	Zone 3 is modified (see below)	_____
CI-3b	Containment Island in Zone 3, US, Concrete Caisson Embankment	US	Zone 3 is modified (see below)	_____
CI-1	Containment Island in Updated Zone 2 in Lower Bay	NY/NJ	Team needs technical information for this alternative still under development by the USACE; Team members will comment individually when progress report is completed	Consider USACE study but note significant environmental concerns
CI-2	Containment Island in Updated Zone 3 in Bight Apex	US	Team needs technical and legal information for this alternative still under development by the USACE; Team members will comment individually when progress report is completed	Consider study; note environmental concerns
CA-1	New Containment Area in Atlantic Basin	NY	Not under consideration by DMMT due to location solely in NY waters	_____
SUBAQUEOUS PIT ALTERNATIVES:				
SP-1	New subaqueous pit, modified Zone 1, Lower Bay	NJ	Team needs technical information for this alternative still under development by the USACE; Team members will comment individually when progress report is completed	Consider study; note environmental concerns

<u>ID#</u>	<u>Management Alternative</u>	<u>Location</u>	<u>Status</u>	<u>Team Response</u>
SP-2	New Subaqueous pit, modified Zone 2, Lower Bay	NY/NJ	Team needs additional information to evaluate this alternative; Team members will comment individually when progress report is completed	Consider study; note environmental concerns
SP-3	New Subaqueous Pit at Bowery Bay, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
SP-4	New Subaqueous Pit at Bay Ridge Flats, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
SP-5	New Subaqueous Pit at Constable Hook, NJ	NJ	Under consideration in the DMMP	Support further study; note potential habitat concerns
SP-6	Newark Bay Subaqueous Pit, North A, NJ	NJ	Under consideration in the DMMP	Supported in previous team report
SP-7	Newark Bay Subaqueous Pit, South, NJ	NJ	Under consideration in the DMMP	Supported in previous team report
SP-8	Existing Large East Bank Subaqueous Pit, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
SP-9	Existing Small East Bank Subaqueous Pit, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
SP-10	Existing West Bank Subaqueous Pit, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
SP-11	Existing CAC Subaqueous Pit, NY	NY	Not under consideration by DMMT due to location in NY waters	_____
UPLAND DISPOSAL ALTERNATIVES:				
UD-1	Upland Disposal Site 159, Bergen County, NJ	Leonia, NJ	Not under consideration by DMMT due to Governor's directive	_____
UD-2	Upland Disposal at Site 161, Bergen County, NJ	Moonachie, NJ	Not under consideration by DMMT due to Governor's directive	_____
UD-3	Upland Disposal at Site 172, Hudson County, NJ	NJ	Under consideration by USACE DMMP	Support further study, provided HMDC approval is secured
UD-4	Upland Disposal at Site 184, Middlesex County	NJ	Not under consideration by DMMT due to Governor's directive	_____
UD-5	Upland Disposal at Site 187, Middlesex County	Raritan Arsenal, NJ	Under consideration in the USACE progress report	Support further study, provided landowner and local approvals are secured.
UD-6	Upland Disposal at Site 190, Middlesex County	Edgeboro Landfill, NJ	Under consideration in the USACE progress report	Support further study provided landowner and local approvals are secured
UD-7/UP-1	Upland Disposal at Site 193, Monmouth County	Belford, NJ	Under consideration in the USACE progress report	Site has potential as a regional disposal facility for nearby projects
UD-8	Upland Disposal at Site 214, Monmouth County	Shrewsbury, NJ	Not under consideration by DMMT due to Governor's directive	_____
UD-9	Upland Disposal at Site 235, Richmond County	NY	Not under consideration due to location in NY	_____
UD-10	Upland Disposal at Cold Spring Quarry	NY	Not under consideration due to location in NY	_____
UD-11	Upland Disposal at Cedar Cliff Quarry	NY	Not under consideration due to location in NY	_____
UD-12	Upland Disposal at Clinton Point Quarry	NY	Not under consideration due to location in NY	_____
UD-13	Upland Disposal at Brigham Brickyard	NY	Not under consideration due to location in NY	_____
UD-14	Upland Disposal at Cementon Quarry	NY	Not under consideration due to location in NY	_____
UD-15	Upland Disposal at Ravena Quarry	NY	Not under consideration due to location in NY	_____
UD-16	Upland Disposal at Orion Elizabeth	NJ	Implemented in NJ	Team supports and has supported in previous report
DECONTAMINATION TECHNOLOGY:				
DT-1	Decontamination Technology-Production	TBD	Under Consideration in the DMMP	Team supports further development

<u>ID #</u>	<u>Management Alternative</u>	<u>Location</u>	<u>Status</u>	<u>Team Response</u>
	Level Testing			
DT-2	Decontamination Technology-Partial Implementation	TBD	Under Consideration in the DMMP	Team supports further development
DT-3	Decontamination Technology-Partial Implementation	TBD	Under Consideration in the DMMP	Team supports further development
DT-4	Decontamination Technology-Full Scale Implementation	TBD	Under Consideration in the DMMP	Team supports further development
<u>SEDIMENT REDUCTION ALTERNATIVES:</u>				
SR-1	Sediment Reduction at Port Chester Harbor	NY	Not under consideration by DMMP due to location in NY	_____
SR-2	Sediment Reduction at Flushing Bay	NY	Not under consideration by DMMP due to location in NY	_____
SR-3	Sediment Reduction at Raritan River	NJ	Under consideration in DMMP progress report	Support further study
SR-4	Sediment Reduction at N. Shooters Island Reach,	NY/NJ Arthur Kill	Under consideration in DMMP progress report	Support further study
SR-5	Sediment Reduction at Port Newark/Port Elizabeth	NJ	Under consideration in DMMP progress report	Support further study
SR-6	Sediment Reduction at Bay Ridge/Red Hook Channels	NJ	Under consideration in DMMP progress report	Support further study
SR-7	Sediment Reduction at Port Newark/Port Elizabeth	NJ	Under consideration in DMMP progress report	Support further study
SR-8	Sediment Reduction at MOTBY/Port Jersey, Bayonne	NJ	Under consideration in DMMP progress report	Support further study
SR-9	Sediment Reduction at Claremont Terminal	NJ	Under consideration in DMMP progress report	Support further study
<u>CONTRACT DISPOSAL:</u>				
CD-1	Contract Disposal/RFP	TBD	Under consideration in the DMMP progress report	Support concept; but note previous unsatisfactory results in prior USACE RFP (proposals received were extremely costly)
<u>OPTIONS INCLUDED IN DRAFT LISTS OF THE DMMP PROGRESS REPORT:</u>				
<u>LAND REMEDIATION ALTERNATIVES:</u>				
LR-1	Land Remediation-OENJ	Bayonne Site, Hudson County	Under consideration of USACE in the DMMP progress report	Support only Phase 1 at this time
LR-2	Land Remediation-Seaboard/Koppers Koke Site	NJ	Under consideration of USACE in the DMMP progress report	Support
LR-3	Land Remediation-OENJ metromall	NJ	Under consideration of USACE in the DMMP progress report	Support
LR-4	Land Remediation-Keegan Landfill	Kearny, NJ	Under consideration of USACE in the DMMP progress report	Support, provided approval from HMDC is secured

<u>ID #</u>	<u>Management Alternative</u>	<u>Location</u>	<u>Status</u>	<u>Team Response</u>
LR-5	Land Remediation-Penn. Coal Mines	PA	Under consideration of USACE in the DMMP progress report	Support demonstration project
	SUB-CHANNEL PLACEMENT:			
SC-1	Sub-Channel Placement Newark Bay Federal Channels	NJ	Under consideration in DMMP progress report	Support further study and development
SC-2	Sub-Channel Placement at Bay Ridge/Red Hook Federal channels and anchorage	NY	Not under consideration by DMMT due to location in NY	_____
SC-3	Sub-Channel Placement Hudson River Federal Channel	NY/NJ	Under consideration in DMMP progress report	Support further study and development
SC-4	Sub-Channel Placement Ward's Point Bend Federal Channel & Anchorage	NY/NJ	Under consideration in DMMP progress report	Support further study and development
	DECONTAMINATION TECHNOLOGY:			
DP-1	"Cement-Lock Technology" IGT	TBD	Under consideration in DMMP progress report	Support
DP-2	Solvent Extraction/Stabilization-Metcalf & Eddy	TBD	Under consideration in DMMP progress report	Support
DP-3	Portland Cement Solidification-CEWES	TBD	Under consideration in the DMMP progress report	Support
DP-4	Plasma-arc vitrification-Westinghouse, Inc.	TBD	Under consideration in the DMMP progress report	Support
DP-5	Manufactured Soil Production-CEWES	TBD	Under consideration in the DMMP progress report	Support
DP-6	Soil Washing—BioGenesis Enterprises	TBD	Under Consideration in the DMMP progress report	Support
	DECONTAMINATION SITES:			
DS-1	Decontamination technology and Staging/testing site	Elizabethtown Gas Site, NJ	Under Consideration in the DMMP progress report	Support, provided local approvals are secured
DS-2	Decontamination technology and Staging/testing site	Construction & Marine Equipment - Deegan Site, Elizabeth	Under Consideration in the DMMP progress report	Support, provided local approvals are secured
DS-3	Decontamination technology and Staging/testing site	HMDC Site, Lyndhurst & Kearny Keegan Landfill, NJ	Under Consideration in the DMMP progress report	Support, provided HMDC approval is secured
DS-4	Former Raritan Arsenal	Edison/Wood-bridge, NJ	Under Consideration in the DMMP progress report	Support only with landowner and local approval
DS-5	Steel-Style Co. Site	Newburgh, NY	Not under consideration by DMMT due to location in New York	_____
?	Decontamination technology and Staging/testing site	Bark Camp Mining Site, PA	Under Consideration in the DMMP progress report	Support a pilot/demonstration project

IV. ALTERNATIVES:

A. REMEDIATION OF THE HISTORIC AREA REMEDIATION SITE: (OD-3, OR-1)

Dredged materials have been disposed at the New York Bight Apex since the 1800's. The "Mud Dump Site" was officially designated in 1984 by the USEPA with a maximum capacity of 100 million cubic yards. Approximately 68 million cubic yards have been deposited at the MDS to date. The Mud Dump site was closed September 1, 1997 to all but appropriate remediation material. Simultaneous with the closure of the Mud Dump was the designation of the Mud Dump and surrounding areas as the Historic Area Remediation Site (HARS).

Remediation of the Site will be accomplished by placement of remediation materials only to cap existing contaminated sediments that have been historically disposed of at that site. The Team concurs with this approach and supports the USEPA HARS remediation plan discussed in the Supplement to the Environmental Impact Statement on the New York Dredged Material Disposal Site Designation of the Historic Area Remediation Site (HARS) in the New York Bight Apex (May, 1997). The Team supports remediation of the HARS.

B. AQUATIC CONTAINED DISPOSAL FACILITIES (ACDFS):

Containment Islands, Containment Areas, and Subaqueous pits comprise the aquatic contained disposal section of the DMMP. Three Zones were considered as possible site areas for these ACDFS. Zone 1, in the Raritan Bay, was eliminated from consideration by the Governor due to its proximity to the Jersey Shore area and potential adverse impacts on the continued restoration of this important recreational and environmental resource. Consideration of ACDFS in the remaining zones is as follows:

1. CONTAINMENT ISLANDS

(CI-2a) Containment Island in Zone 2, NY/NJ--Sheet Pile Cofferdam without a pit in the Lower Bay. The potential loss of habitat is of concern to some Team members and the area is known to be a favored fishing area among recreational fishermen.

(CI-2b) Containment Island Zone 2, NY/NJ--Sheet Pile Cofferdam with pit in the Lower Bay. Same concerns as above.

(CI-2c) Containment Island in Zone 2--Stone/Armor Embankment with pit. Same concerns as above.

(CI-3a) Containment Island at Zone 3, federal waters--Sheet pile Cofferdam without pit. Zone 3 is an area on the inner continental shelf with ~60 feet depths. Concerns include wave energy, but relatively minor habitat loss. There may also be potential legal concerns.

(CI-3b) Containment Island at Zone 3, federal waters--Concrete caisson embankment. Same concerns as above.

(CI-1, CI-2) Containment Islands in modified zones--not enough information is available to the Team for complete evaluation. Note environmental concerns and consider study.

2. SUBAQUEOUS PITS

(SP-2) New Subaqueous Pits at Zone 2, NY, NJ.--Concerns involve the loss of bay bottom and habitat, and movement of contaminated materials to a previously uncontaminated site.

(SP-5) New Subaqueous Pit off Constable Hook , NJ--Team supports additional study; potential impacts on areas with high habitat value is noted. The presence of potential surficial contaminated sediments (to unknown depths) may present difficulties in disposal and increase the estimated cost.

(SP-6) and (SP-7) Newark Bay Subaqueous Pits, North and South--Recommended in the earlier team report (Feb., 1996). Siting of new pits will have to be undertaken, taking into consideration proximity to shoreline communities.

C. UPLAND DISPOSAL/LAND REMEDIATION

Upland disposal has the potential to contain large quantities of dredged materials over time and can result in the acceptable use of contaminated materials. Screening criteria for siting upland disposal facilities” has been approved by the Containment Work Group, established by the USEPA under their Dredged Materials Management Forum (the NJDEP and NJMR have additional screening criteria). The Work Group document is entitled, “Criteria for Upland Dredged Material Confined Material Disposal Facilities (January, 1997). This work group has proposed that sites (at the very least) should be located:

- in an area of minimal potential environmental impact, avoiding wetlands, parklands, aquifer recharge/water supply areas, floodplain, coastal erosion areas, threatened/endangered species habitats, and other areas of ecological, recreational, cultural/historical or agricultural significance;
- in an area of impermeable substrate;
- in a previously developed, non-residential area;
- of sufficient size to properly contain dredged materials for the expected life of the facility;
- selected to ensure ease of implementation including ownership, local zoning, and other socioeconomic factors;
- near potential dredging areas or configured to provide suitable access to a navigable waterway.

The DMMT recommends that these criteria be considered in any upland siting proposals by the USACE. In addition, the New Jersey Department of Environmental Protection has finalized a technical manual, entitled, The Management and Regulation of Dredging Activities and Dredged Materials in New Jersey’s Tidal Waters, outlining criteria for upland dredged material disposal. The criteria in this document, too, should be considered in USACE upland siting proposals included in the DMMP.

1. Sites eliminated from consideration:

Upland Disposal at Bergen County sites: are in close proximity to residential communities and the Governor has determined that these sites should not be under consideration as a site for dredged sediment disposal. The USACE has removed them from consideration under the DMMP.

Monmouth County Site 214: was eliminated under the Governor’s directive due to proximity to residential areas and other regional considerations (Shrewsbury).

2. Sites remaining under consideration:

Upland Disposal at Site, 172, Hudson County, NJ: Remediation of former Keegan Landfill, Kearny: Potential disposal and landfill remediation favored by Team. Use of this site must be approved by the HMDC, NJDEP, and other appropriate agencies.

Upland Disposal at Orion, Elizabeth, NJ: Remediation of a former landfill with redevelopment. Acceptable, already in use.

Koppers Coke Seaboard Site: Project, ongoing, is supported by DMMT. The project should include upland development for commercial/industrial use.

Bayonne, Phase 1: Team members support Phase 1 remediation of a contaminated site and landfill with redevelopment, provided state and local approvals are obtained.

Upland Disposal at Site 190, Middlesex County, NJ: active Edgeboro landfill--Potential disposal, extraction mining, and landfill remediation, issues requiring further study due to environmental concerns. Support study for site remediation, provided landowner and local and state agency approvals are secured.

Land Remediation at Raritan Arsenal, Edison, NJ: Support further study provided landowner and local approvals are secured.

D. DECONTAMINATION TECHNOLOGY

Decontamination Technology has previously been identified by the DMMT as a medium-to long-term solution to manage some contaminated dredged materials from the Port of NY/NJ. The Team recommends continued pursuit of production level to full scale implementation of decontamination technologies in the Port, taking into account cost considerations. As proposed in the DMMP, the following decontamination technologies: IGT ("Cement Lock Process"); Metcalf & Eddy (Cement Solidification/Stabilization); Westinghouse Science & Technology Center (Plasma Vitrification); WES (Manufactured Soil Production/Phytoremediation); BioGenesis Enterprises, Inc. (Soil Washing) should be pursued at the following decontamination levels:

- DT-1:** Decontamination Technology Production-Level Testing,
- DT-2:** Decontamination Technology Partial Implementation,
- DT-3:** Decontamination Technology Partial Implementation, and
- DT-4:** Decontamination Technology Full-Scale Implementation.

E. DECONTAMINATION SITES

The following sites have received preliminary screening as potential sites for testing and implementation of decontamination technologies:

- DS-1:** Elizabethtown Gas Co. Site--Potential support by DMMT provided that there is local approval.
- DS-2:** Deegan Site, Elizabeth--potential support for the use of this site for a transfer operation provided that there is local approval.
- DS-4:** HMDC Site, Lyndhurst & Kearny, NJ--Supported by DMMT, provided that there is local approval.
- DS-5:** Keegan Landfill, Kearny, NJ--Supported by DMMT provided that there is local approval.

The Team supports further feasibility studies for pilot and full-scale projects at these sites.

F. SEDIMENT REDUCTION/MINIMIZATION

The Sediment Source Reduction/Minimization Methods are techniques that can be used to reduce the quantity of sediments that need to be dredged. These include structural modifications, channel design optimization, advanced maintenance dredging, and port facilities planning. The Team has previously endorsed and continues to endorse these options. These methods should also be pursued in conjunction with the Harbor Navigation Study, and should be considered in all projects. Advanced Maintenance methods are techniques that can be used to reduce dredging frequency, control the locus of channel shoaling, separate shoaling into discrete areas thereby reducing costs. A variation of advanced maintenance includes overdredging to create disposal capacity.

SR-3 --- Sediment Reduction at Raritan River, NJ --Team recommends further consideration and reevaluation of channel design.

SR-4 -- Sediment Reduction at North Shooters Island Reach, AK, NJ--Team supports further consideration and evaluation of Advanced Maintenance (AM) techniques.

SR-5 -- Sediment Reduction at Port Newark/Port Elizabeth, NJ--Team Supports further consideration and evaluation of Advanced Maintenance (AM) techniques at this site.

SR-7 -- Sediment Reduction at Port Newark/Port Elizabeth--Newark Bay and related federal channel areas (basin entrance narrowing and pneumatic barriers)--Team supports further consideration and evaluation of this technology. The proposal also needs the concurrence of the Harbor Operations Committee.

SR-8 -- Sediment Reduction at MOTBY/Port Jersey, Bayonne, NJ (MOTBY)--basin entrance narrowing and pneumatic barriers--MOTBY and the Port Jersey Channel--Team supports further consideration and evaluation of this option.

SR-9 -- Sediment Reduction at Claremont Terminal--Claremont Ocean Terminal Channel--basin entrance narrowing, pneumatic barriers and channel redesign--Team supports these options.

H. SUB-CHANNEL PLACEMENT

Sub-channel placement can be considered a type of subaqueous disposal pit within a channel area. The Team generally supports sub-channel placement for sediment management purposes.

V. ADDITIONAL TEAM RECOMMENDATIONS:

The Team recommended the following additional actions:

FEDERAL:

1. The USACE should develop criteria for screening all disposal options by category.
2. The USACE should continue to educate the public on all aspects of the federal DMMP.
3. The USACE should emphasize beneficial use of dredged material.

STATE:

4. The Office of Maritime Resources and NJDEP should continue to pursue disposal options for long-term management of dredged materials.
5. The Office of Maritime Resources and the NJDEP should pursue decontamination technology development through a "Request for Proposals" (RFP) process.
6. The Office of Maritime Resources and the NJDEP should continue to encourage beneficial use projects for contaminated sediments.
7. The Office of Maritime Resources should develop a long-term management plan for dredged materials for the State of New Jersey, including contaminated sediments from the Port.
8. The Office of Maritime Resources and the NJDEP should pursue immediate trackdown and cleanup of sources of contaminants to marine sediments.
9. NJDEP should continue to reduce contaminant loads from tributaries and runoff; and implement a watershed management approach.
10. All state and federal agencies should continue to consider additional nearshore or confined disposal facilities in the Newark Bay area as recommended by the DMMT's Final Report of 1996.
11. Additional proposals from the USACE for sites/options located in new Jersey upland areas or jurisdictional waters should be submitted to the appropriate New Jersey agencies (DMMT/NJMR/NJDEP) for consideration prior to inclusion in supplemental DMMP reports/plans.
12. The Office of Maritime Resources and the NJDEP should continue to implement the NY/NJ Joint Dredging Plan
13. Habitat restoration projects using dredged materials at canals that are no longer used for navigation purposes (e.g. River Terminals and Long Slip Canal) should continue to be evaluated by state, federal and local agencies.
14. Public outreach and education efforts regarding DMMP proposals should continue to be pursued in a proactive manner.

BISTATE:

15. Efforts to implement the recommendations of the Bistate Dredging Plan for the Port of New York and New Jersey should continue to be pursued.

VI. CONCLUSION

This report concludes the current assignment of the DMMT. State, federal and local agencies and Team members will continue to work cooperatively to resolve economic and environmental issues with respect to dredging and dredged material management. In the future, the Team will meet at the Governor's direction to address dredging-related issues in the State of New Jersey.

TEAM MEMBER:	Affiliation
Steven J. Corodemus, Chairman	Assemblyman, District 11
James E. Benton, Executive Director	New Jersey Petroleum Council
Lillian C. Borrone, Port Commerce Director	Port Authority of New York and New Jersey
James A. Capo, President	New York Shipping Association, Inc.
Albert Cernadas, Executive Vice-President	International Longshoremens' Association AFL/CIO
Mauro Checchio, Chairman	Infrastructure/Transportation Committee
Angela Cristini, Ph.D.	Ramapo College of New Jersey
Sally Dudley, Executive Director	Association of NJ Environmental Commissions
Judy Jengo, Policy Advisor	Office of the Governor
M. Brian Maher, President	Maher Terminals
Lewis J. Nagy, Assistant Commissioner	New Jersey Department of Environmental Protection
Senator Edward T. O'Connor, Jr.	Senator, District 31
Dennis J. Suszkowski, Ph.D.	Hudson River Foundation
James T.B. Tripp, Esq.	Environmental Defense Fund
Robert K. Tucker, Ph.D., Director	Ecopolicy Center, Rutgers University
Cynthia A. Zipf, Executive Director	Clean Ocean Action
FEDERAL AGENCY REPRESENTATIVES:	
William Muszynski, Deputy Regional Admin.	USEPA
Colonel Gary Thomas	USACE
STAFF:	
Jennifer A. DiLorenzo, Technology Prog. Mgr.	Office of Maritime Resources
Beverly A. Fedorko, Special Assistant	Office of the Commissioner
Barbara Marshall, Support Assistant	Office of the Commissioner

USACE DMMP ALTERNATIVE SUMMARIES

Alternatives Summary

Table 14-1

Alternative Type	Site Name	State	Suitable Material	Area (acres)	Volume (cy)	Year Available	Construction Cost	Yearly O&M Cost	Disposal Cost/cy
OD - 1	Ocean Disposal at the Mud Dump Site	US	P	1,864.5	25,000,000	1998	N/A	N/A	2.00
OD - 2	Ocean Disposal at the Mud Dump Site with capping	US	P w/cap	1,864.5	1,100,000	1998	NA	N/A	38.00
OD - 3	Ocean Remediation at Historic Area Remediation Site	US	P	TBD	100,000,000	1998	N/A	N/A	2.00
CI - 1a	Cont. Is. In Zone 1, NJ, Sheet Pile Cofferdam without pit	NJ	F	1,520.0	150,000,000	2004	573,785,222	11,500,000	5.23
CI - 1b	Cont. Is. In Zone 1, NJ, Sheet Pile Cofferdam with pit	NJ	F	880.0	150,000,000	2003	852,697,303	11,400,000	7.18
CI - 1c	Cont. Is. In Zone 1, NJ, Stone/Armor Embankment w/pit	NJ	F	820.0	150,000,000	2008	1,195,520,942	11,800,000	9.49
CI - 2a	Cont. Is. In Zone 2, NY/NJ, Sheet Pile Cofferdam w/pit	NY/NJ	F	1,520.0	150,000,000	2004	1,195,520,942	11,500,000	5.23
CI - 2b	Cont. Is. In Zone 2, NY/NJ, Sheet Pile Cofferdam with pit	NY/NJ	F	880.0	150,000,000	2003	1,195,520,942	11,400,000	7.18
CI - 2c	Cont. Is. In Zone 2, NY/NJ, Stone/Armor Embankment w/pit	NY/NJ	F	820.0	150,000,000	2008	1,195,520,942	11,800,000	9.49
CI - 3a	Cont. Is. at Zone 3, US, Sheet Pile Cofferdam without pit	US	F	790.0	150,000,000	2002	1,607,078,507	12,500,000	12.51
CI - 3b	Cont. Is. In Zone 3, US, Concrete Caisson Embankment	US	F	660.0	150,000,000	2006	2,200,105,788	12,600,000	16.72
CA - 1	New Containment Area In Atlantic Basin, NY	NY	F	35.0	1,770,000	1999	65,000,000	N/A	37.00
SP - 1	New Subaqueous Pits at Zone 1, NJ	NJ	F	1,000.0	26,700,000	1998	N/A	N/A	9.85
SP - 2	New Subaqueous Pits at Zone 2, NY/NJ	NY/NJ	F	1,000.0	26,700,000	1998	N/A	N/A	9.85
SP - 3	New Subaqueous Pit at Bowery Bay, NY	NY	F	74.0	3,400,000	1999	51,000,000	N/A	30.00
SP - 4	New Subaqueous Pit at Bay Ridge Flats, NY	NY	F	375.0	7,100,000	1999	156,200,000	2,144,000	22.00
SP - 5	New Subaqueous Pit Off Constable Hook, NJ	NJ	F	300.0	3,200,000	1999	86,000,000	2,144,000	26.00
SP - 6	Newark Bay Subaqueous Pit, North A, NJ	NJ	F	N/A	1,700,000	1997	51,000,000	2,144,000	30.00
SP - 7	Newark Bay Subaqueous Pit, South, NJ	NJ	F	N/A	639,000	1997	19,170,000	2,144,000	30.00
SP - 8	Existing Large East Bank Subaqueous Pit, NY	NY	F	853.0	6,400,000	1996	N/A	2,144,000	2.45
SP - 9	Existing Small East Bank Subaqueous Pit, NY	NY	F	83.0	1,500,000	1996	N/A	2,144,000	2.45
SP - 10	Existing West Bank Subaqueous Pit, NY	NY	F	300.0	2,000,000	1998	N/A	2,144,000	2.45
SP - 11	Existing CAC Subaqueous Pit, NY	NY	F	165.0	1,100,000	1996	N/A	2,144,000	2.45
UD - 1	Upland Disposal at Site 159, Bergen County, NJ	NJ	F	109.0	1,400,000	2002	48,000,000	500,000	35.00
UD - 2	Upland Disposal at Site 161, Bergen County, NJ	NJ	F	167.0	2,200,000	2002	63,000,000	500,000	35.00
UD - 3	Upland Disposal at Site 172, Hudson County, NJ	NJ	F	209.0	2,700,000	2002	48,000,000	500,000	35.00
UD - 4	Upland Disposal at Site 184, Middlesex County, NJ	NJ	F	107.0	3,200,000	2002	48,000,000	500,000	35.00
UD - 5	Upland Disposal at Site 187, Middlesex County, NJ	NJ	F	112.0	1,500,000	2002	43,000,000	500,000	35.00
UD - 6	Upland Disposal at Site 190, Middlesex County, NJ	NJ	F	117.0	1,500,000	2002	48,000,000	500,000	35.00
UD - 7	Upland Disposal at Site 193, Monmouth County, NJ	NJ	F	160.0	2,100,000	2002	48,000,000	500,000	35.00
UD - 8	Upland Disposal at Site 214, Monmouth County, NJ	NJ	F	103.0	1,300,000	2002	48,000,000	500,000	35.00
UD - 9	Upland Disposal at Site 235, Richmond County, NY	NY	F	102.0	1,200,000	2002	48,000,000	500,000	35.00
UD - 10	Upland Disposal at Cold Spring Quarry, NY	NY	F	25.0	1,000,000	2000	45,000,000	500,000	25.00
UD - 11	Upland Disposal at Cedar Cliff Quarry, NY	NY	F	100.0	2,000,000	2000	45,000,000	500,000	25.00
UD - 12	Upland Disposal at Clifton Point Quarry, NY	NY	F	685.0	2,000,000	2000	45,000,000	500,000	25.00
UD - 13	Upland Disposal at Brigham Brickyard Quarry, NY	NY	F	185.0	1,300,000	1999	42,200,000	500,000	25.00
UD - 14	Upland Disposal at Cementon Quarry, NY	NY	F	620.0	8,000,000	2000	45,000,000	500,000	25.00
UD - 15	Upland Disposal at Ravena Quarry, NY	NY	F	235.0	3,000,000	2000	45,000,000	500,000	25.00
UD - 16	Upland Disposal at Orion Elizabeth, NJ	NJ	F	166.0	1,200,000	1996	30,000,000	500,000	50.00
DT - 1	Decontamination Tech. Production-Level Testing	TBD	F	TBD	55,000	2002	TBD	TBD	60.00
DT - 2	Decontamination Tech. Partial Implementation	TBD	F	TBD	(150,000)	2004	TBD	TBD	50.00
DT - 3	Decontamination Tech. Partial Implementation	TBD	F	TBD	(375,000)	2006	TBD	TBD	40.00
DT - 4	Decontamination Tech Full-Scale Implementation	TBD	F	TBD	(4,908,000)	2010	TBD	TBD	30.00
SR - 1	Sediment Reduction at Port Chester Harbor, NY	NY	NA	TBD	TBD (max=16,700)	1997	N/A	TBD	TBD
SR - 2	Sediment Reduction at Flushing Bay, NY	NY	NA	TBD	TBD (max=90,500)	1997	N/A	TBD	TBD
SR - 3	Sediment Reduction at Raritan River, NJ	NJ	NA	TBD	TBD (max=96,400)	1997	N/A	TBD	TBD
SR - 4	Sediment Reduc at North Shooter's Is. Reach, AK, NJ	NY/NJ	F	TBD	100,000.0	1997	N/A	TBD	30.00
SR - 5	Sediment Reduc at Port Newark/Port Elizabeth, NJ	NJ	F	TBD	100,000.0	1997	N/A	TBD	30.00
SR - 6	Sediment Reduc at Bay Ridge/Red Hook Channels	NY	F	TBD	200,000.0	1997	N/A	TBD	30.00
SR - 7	Sediment Reduction at Port Newark/Port Elizabeth, NJ	NJ	F	N/A	(40,000.0)	2000	TBD	TBD	15.00
SR - 8	Sediment Reduction at MCTBY/Port Jersey, Bayonne, NJ	NJ	F	N/A	(24,200)	2000	4,700,000	0	15.00
SR - 9	Sediment Reduction at Claremont Terminal, NJ	NJ	F	N/A	(22,000)	2000	4,100,000	0	14.00
CD - 1	Contract Disposal via RFP	TBD	F	TBD	TBD	1997	N/A	N/A	120.00

Note: Numbers in Parenthesis Indicate an Annual Volume Amount. Costs are relative to disposal only (i.e., does not include dredging costs).

DMMP Alternatives Summary

Option	Site Name	State	Area (acre)	Volume	Year Available	Lead/Proponent
Ocean Remediation						
	Historic Area Remediation Site	US	13,308.0	L	1,997	USEPA
Decontamination Technologies / Treatment Methods						
<u>Processes to be Tested (production level)</u>						
	*Cement-Lock Technology - Inst. of Gas Tech.	NA	TBD	S		EPA/CENAN
	Solvent Extraction & Solidification/Stabilization - Metcalf & Eddy, Inc.	NA	TBD	S		EPA/CENAN
	Portland Cement Solidification/Stabilization - Metcalf & Eddy, Inc.	NA	TBD	S		EPA/CENAN
	Plasma-arc vitrification - Westinghouse	NA	TBD	S		EPA/CENAN
	Manufactured Soil production	NA	TBD	S		EPA/CENAN
<u>Most Promising Potential Sites for Staging Processes</u>						
	Elizabethtown Gas Co Site, Elizabeth, NJ	NJ	TBD	TBD		EPA/CENAN
	Keegan Site, Elizabeth, NJ	NJ	TBD	TBD		EPA/CENAN
	Steel-Style Co. Site, Newburgh, NY	NY	TBD	TBD		EPA/CENAN
	HMOC Site, Lynhurst & Kearny, NJ	NJ	TBD	TBD		EPA/CENAN
	Keegan Landfill, Kearny, NJ	NJ	TBD	TBD		EPA/CENAN
	Bark Camp Mining Site, Penfield, PA	PA	TBD	TBD		EPA/CENAN
Beneficial Uses						
<u>Habitat Restoration</u>						
	Large East Bank Pit, NY	NY	885.0	M		CENAN
	Small East Bank Pit, NY	NY	83.0	S		CENAN
	West Bank Pit, NY	NY	300.0	S		CENAN
	CAC Pit, NY	NY	165.0	S		CENAN
	Peiham Bay Landfill, NY	NY	TBD	S		Private/CENAN
	White Island, Jamaica Bay, NY	NY	TBD	TBD		CENAN
	Former Runway, Floyd Bennett Field, Jamaica Bay, NY	NY	TBD	TBD		CENAN
	Jamaica Bay Existing Pits (several)	NY	TBD	TBD		CENAN
<u>Land Remediation</u>						
	CENJ / Bayonne Site, Hudson County	NJ	156.0	M		Private
	Seaboard / Koppers Coke Site	NJ	TBD	TBD		Private
	CENJ / Microsmall Site	NJ	69.0	S		Private
	Keegan Landfill, Kearney, Hudson County, NJ	NJ	209.0	S		Private
	Pennsylvania Coal Mine Reclamation	PA	TBD	L		Private

DRAFT

Alleviate Water Circulation Problems

Land Remediation

LR-1	OENJ/Bayonne Site, Bayonne, Hudson County	NJ	156.0	Medium	High	1998	Private
LR-2	Seaboard/Koppers Coke Site, Kearny, Hudson County	NJ	88.0-150.0	Small-Medium	High	1998	Private
LR-3	OENJ/Metromall Site, Elizabeth, Union County	NJ	69.0	Small	High	1996	Private
LR-4	Keegan Landfill, Kearny, Hudson County	NJ	709.0	Small	High	1999	Private
LR-5	Pennsylvania Coal Mine Reclamation	PA	TBD	Long-Term	TBD	1999	Private

Containment Facilities

Upland

UP-1	Belford Harbor (a.k.a. N51), Belford, Monmouth County	NJ	TBD	Small	Medium	1999	NYD
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Aquatic

Confined Aquatic Disposal (a.k.a. subaqueous pits)

<u>Inside Channels</u>							
SC-1	Newark Bay Federal Channels	NJ	100.0	Large	Low	1999	PANYNJ
SC-2	Bay Ridge/Red Hook Federal Channels	NY	260.0	Large	Low	1999	NYD
SC-3	Hudson River Federal Channels	NY/NJ	250.0	Large	Low	1999	NYD
SC-4	Ward's Point Bend of NY/NJ Federal Channel	NY	90.0	Medium	Low	1999	NYD

Outside Channels

SP-1	Existing Lower Bay Pits	NY	1,401.0	Large	Low	1998	NYD
SP-2	New CAD Facilities in Updated Zone 1 of Lower Bay	NJ	TBD	Long-Term	Low	1999	NYD
SP-3	New CAD Facilities in Updated Zone 2 of Lower Bay	NY/NJ	TBD	Long-Term	Low	1999	NYD
SP-4	Newark Bay CDF	NJ	31.0	Small	Medium	1997	PANYNJ
SP-5	Additional Newark Bay CAD Facilities	NJ	TBD	TBD	TBD	1999	NYD
SP-6	Constable Hook Flats, Bayonne, Hudson County	NJ	TBD	TBD	TBD	1999	NYD
SP-7	Bowery Bay, Astoria, Queens County	NY	TBD	TBD	TBD	1999	NYD

Nearshore Containment Facilities

NS-1	Atlantic Basin, Red Hook, Kings County	NY	74.0	Medium	Medium	1999	PANYNJ
NS-2	Other Nearshore Sites (under development)	TBD	TBD	TBD	TBD	TBD	PANYNJ

Island Containment Facilities

CI-1	Updated Zone 2 in Lower Bay	NY/NJ	TBD	Long-Term	Low	2003	NYD
CI-2	Updated Zone 3 in Bight Apex	US	TBD	Long-Term	Low	2003	NYD

Contract Disposal

CD-1	Contract Disposal	TBD	TBD	TBD	TBD (high)	1997	Private
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* - Volume: Small = <3,000,000 cubic yards (cy), Medium = 3,000,000 - 10,000,000 cy,
Large = 10,000,000 - 50,000,000 cy, Long-Term = > 50,000,000 cy
** - Cost. Low = < \$20/cy, Medium = \$20 - \$40/cy, High = > \$40/cy

Table 3 - Alternatives Currently Available or Under Investigation

ID Code	Alternative Type Alternative Name/Site	State	Area (acre)	Volume *	Cost **	Year Available	Lead Entry
Ocean Remediation							
OR-1	<i>Historic Area Remediation Site</i>	US	13,306.0	Long-Term	Low	1997	USEPA
Decontamination Technologies/ Treatment Methods							
<u>Candidate Processes for Production-Level Demonstration</u>							
DP-1	"Cement-Lock Technology" - Institute of Gas Technology	N/A	N/A	TBD	High	1999	USEPA/ NYD
DP-2	Solvent Extraction - Metcalf & Eddy, Inc.	N/A	N/A	TBD	High	1999	USEPA/ NYD
DP-3	Solidification/Stabilization - CEWES	N/A	N/A	TBD	Medium -High	1999	USEPA/ NYD
DP-4	Plasma-Arc Vitrification - Westinghouse, Inc.	N/A	N/A	TBD	High	1999	USEPA/ NYD
DP-5	Manufactured Soil Production - CEWES	N/A	N/A	TBD	Medium -High	1999	USEPA/ NYD
DP-6	Sediment Washing - BioGenesis Enterprises, Inc.	N/A	N/A	TBD	High	1999	USEPA/ NYD
<u>Potential Sites for Staging Processes</u>							
DS-1	Elizabethtown Gas Co. Site, Elizabeth, Union County	NJ	31.0	N/A	N/A	1999	USEPA/ NYD
DS-2	Construction & Marine Equipment Co. Site, Elizabeth, Union County	NJ	9.0	N/A	N/A	1999	USEPA/ NYD
DS-3	HVDC Landfill Sites, Kearny/Lyndhurst, Hudson/Bergen Counties	NJ	TBD	N/A	N/A	1999	USEPA/ NYD
DS-4	Former Raritan Arsenal, Edison/Woodbridge, Middlesex County	NJ	TBD	N/A	N/A	1999	USEPA/ NYD
DS-5	Steel-Style Co. Site, Newburgh, Orange County	NY	90.0	N/A	N/A	1999	USEPA/ NYD
DS-6	Barge-Mounted Facility, Port of NY/NJ	NY/NJ	<3.0	N/A	N/A	1999	USEPA/ NYD
Beneficial Uses							
<u>Habitat Restoration</u>							
HR-1	Fill Existing Degraded Pits	NY/NJ	TBD	TBD	TBD	1998	NYD
HR-2	Create/Enhance Wetlands	NY/NJ	TBD	TBD	TBD	1999	NYD
HR-3	Create/Enhance Shellfish Beds	NY/NJ	TBD	TBD	TBD	1998	NYD
HR-4	Create/Enhance Fish Reefs	NY/NJ	TBD	TBD	TBD	1999	NYD
HR-5	Create/Enhance Bird Habitat	NY/NJ	TBD	TBD	TBD	1999	NYD
HR-6	Construct Wetlands for Water Quality Improvement	NY/NJ	TBD	TBD	TBD	1999	NYD
HR-7	Fill Selected Areas to Improve Water Quality/Flushing	NY/NJ	TBD	TBD	TBD	1999	NYD
HR-8	Fill Bathymetrically Disturbed Areas to Alleviate Water Circulation Problems	NY/NJ	TBD	TBD	TBD	1999	NYD

* - Volume: Small = <3,000,000 cubic yards (cy), Medium = 3,000,000 - 10,000,000 cy,

Large = 10,000,000 - 50,000,000 cy, Long-Term = > 50,000,000 cy

** - Cost: Low = < \$20/cy, Medium = \$20 - \$40/cy, High = > \$40/cy

ID Code	Alternative Type Alternative Name/Site	State	Area (acre)	Volume *	Cost **	Year Available	Lead Entity
Land Remediation							
LR-1	OENJ/Bayonne Site, Bayonne, Hudson County	NJ	156.0	Medium	High	1998	Private
LR-2	Seaboard/Koppers Coke Site, Kearny, Hudson County	NJ	88.0-150.0	Small-Medium	High	1997	Private
LR-3	Jersey Gardens Mall Site, Elizabeth, Union County	NJ	69.0	Small	High	1996	Private
LR-4	Keegan Landfill, Kearny, Hudson County	NJ	209.0	Small	High	1999	Private
LR-5	Pennsylvania Coal Mine Reclamation	PA	TBD	Long-Term	TBD	1999	Private
LR-6	HMDC Landfill Sites	NJ	TBD	TBD	TBD	2000	HMDC
Containment Facilities							
<u>Upland</u>							
UP-1	Belford Harbor (a.k.a. N61), Belford, Monmouth County	NJ	TBD	Small	Medium	1999	NYD
<u>Aquatic</u>							
<u>Confined Aquatic Disposal (a.k.a. subaqueous pits)</u>							
<u>Inside Channels</u>							
SC-1	Newark Bay Federal Channels	NJ	100.0	Large	Low	1999	PANYNJ
SC-2	Bay Ridge/Red Hook Federal Channels	NY	260.0	Large	Low	1999	NYD
SC-3	Hudson River Federal Channel	NY/NJ	250.0	Large	Low	1999	NYD
SC-4	Ward's Point Bend of NY/NJ Federal Channel	NY	90.0	Medium	Low	1999	NYD
<u>Outside Channels</u>							
SP-1	Existing Lower Bay Pits	NY	1,401.0	Large	Low	1998	NYD
SP-2	New CAD Facilities in Updated Zone 1 of Lower Bay	NJ	TBD	Long-Term	Low	1999	NYD
SP-3	New CAD Facilities in Updated Zone 2 of Lower Bay	NY/NJ	TBD	Long-Term	Low	1999	NYD
SP-4	Newark Bay CDF	NJ	31.0	Small	Medium	1997	PANYNJ
SP-5	Additional Newark Bay CAD Facilities	NJ	TBD	TBD	TBD	1999	NYD
SP-6	Constable Hook Flats, Bayonne, Hudson County	NJ	TBD	TBD	TBD	1999	NYD
SP-7	Bowery Bay, Astoria, Queens County	NY	TBD	TBD	TBD	1999	NYD
<u>Nearshore Containment Facilities</u>							
NS-1	Atlantic Basin, Red Hook, Kings County	NY	74.0	Medium	Medium	1999	PANYNJ
NS-2	Other Nearshore Sites (under development)	TBD	TBD	TBD	TBD	TBD	PANYNJ
<u>Island CDF's</u>							
CI-1	Updated Zone 2 in Lower Bay	NY/NJ	TBD	Long-Term	Low	2002	NYD
CI-2	Updated Zone 3 in Bight Apex	US	TBD	Long-Term	Low	2005	NYD
Contract Disposal							
CD-1	Contract Disposal	TBD	TBD	TBD	TBD (High)	1997	Private

* - Volume: Small = <3,000,000 cubic yards (cy), Medium = 3,000,000 - 10,000,000 cy, Large = 10,000,000 - 50,000,000 cy, Long-Term = > 50,000,000 cy

** - Cost: Low = < \$20/cy, Medium = \$20 - \$40/cy, High = > \$40/cy